

SYNONYMY OF *DASYMUTILLA NOCTURNA* MICKEL (HYMENOPTERA: MUTILLIDAE)¹

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Abstract.—*Dasymutilla nocturna* Mickel and *D. subhyalina* Mickel were thought to be female and male, respectively, of the same species since their description in 1928. One female is known from Blythe, Riverside County, California. Another female bears a collection label from Preston, Nevada. All other known females and males are from the Colorado Desert of Imperial County, California. In 1947, *D. paranocturna* Barr & Hurd was described. The known specimens of *D. paranocturna* probably represent two different species, *D. nocturna* and *D. arenivaga* Mickel. Subsequent collections, the use of caged females, and comparison with type specimens have led to the conclusion that *D. nocturna*, *D. subhyalina*, and at least part of the *D. paranocturna* specimens are the same species. A complete synonymy is included.

Key Words.—Insecta, Hymenoptera, Mutillidae, *Dasymutilla nocturna*, *Dasymutilla subhyalina*, *Dasymutilla paranocturna*, *Dasymutilla arenivaga*, California.

Dasymutilla nocturna was first described by Mickel (1928) on the basis of two females. At the same time, Mickel described *D. subhyalina* from two males, acknowledging that these specimens most probably were female and male of the same species. The holotype female and both the holotype and paratype males were collected at light at about 23:00 h on 10 Aug 1917 near Andrade, California, Colorado Sand Desert (Imperial County), by J. Bequaert. The paratype female was collected on 9 Aug 1914 near Brawley, Imperial County, California, by J. C. Bradley. The male paratype was in the collection of J. Bequaert. It is now in the Museum of Comparative Zoology, labeled as *D. nocturna*. All of these specimens have been examined by this author.

Dasymutilla paranocturna was described by Barr & Hurd (1947) on the basis of two female specimens. The holotype was collected from Blythe, Riverside County, California, on 6 Jul 1946, by W. F. Barr. The paratype was collected from San Felipe Creek, Imperial County, California on 17 Jun 1940, by R. G. Dahl. It is in the collection of the University of California, Berkeley. No mention was made of the time of day when these two specimens were collected although they were most likely collected at night (Barr, personal communication). Both of these specimens have also been examined by this author.

Nearly all of the approximately 150 known species of *Dasymutilla* are diurnal. There are only five known exceptions. These include *D. nocturna* and some of the *D. paranocturna*, both of which are known from females only, and *D. subhyalina*, known from males only. All three of these occupy the same geographic range. They also include *D. arenivaga* Mickel and the remaining *D. paranocturna*, known from females only, and *D. megalophthalma* Mickel, known from males only. These occupy the same geographic range.

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Material Examined.—In addition to the type specimens mentioned above, the following material has been examined (all are females of *D. nocturna* and males of *D. subhyalina*, except as noted): USA. CALIFORNIA. IMPERIAL Co.: Westmoreland, 20 Jul 1928, 1 female; Holtville, 22 Oct 1936, A. T. McClay, 1 female; Laguna Lake, 9–11 Jun 1950, 1 female (identified as *D. paranocturna*, probably *D. arenivaga*); Grays Well, 6 Jun 1951, D. J. and J. N. Knull, 1 male; Fort Yuma, near Colorado River, 1 Jul 1951, 1 female (identified as *D. paranocturna*, probably *D. arenivaga*); Algodones Sand Dunes, 9.6 km W of Glamis, 18 Nov 1963, M. E. Irwin, 2 females; 9.6 km W of Glamis, 18 Nov 1963, E. I. Schlinger, 1 male; Glamis, 8 February 1964, M. E. Irwin, E. I. Schlinger, 1 female; 32 km E of Brawley, 13 Jun 1965, G. R. Balmer, 1 male; Glamis, 11 Oct 1972, C. Goodpasture, 1 male; 4.8 km SW of Glamis, 10 Jul 1974, J. Doyen, 2 males; 1.6 km NW of Glamis, 11 Jul 1974, D. G. Manley, 4 males; 4.8 km SW of Glamis, 12 Jul 1974, J. Doyen, 5 males; 1.6 km NW of Glamis, 7 Aug 1974, D. G. Manley, 13 males; 3.2 km NW of Glamis, 4 Nov 1974, J. A. Powell, 4 females; 6.4 km NW of Glamis, 1 May 1975, R. Aalbu, 7 females; 3.2 km NW of Glamis, 22 May 1975, D. G. Manley, 4 females; 3.2 km NW of Glamis, 4 Jun 1975, T. Allen, 1 female; 1.6 km S of Glamis, 29 Mar 1978, R. Dietz and J. Powell, 2 females; 1.6 km S of Glamis, 31 Mar 1978, R. Dietz, 1 female; Glamis, 19 Sep 1980, K. A. Smith, 1 male; 1.6 km NW of Glamis, 12 May 1992, D. G. Manley, 8 females; 1.6 km NW of Glamis, 13 May 1992, D. G. Manley, 9 females; 1.6 km NW of Glamis, 11 Jul 1992, D. G. Manley, 6 females; 1.6 km NW of Glamis, 11 Jul 1992, D. G. Manley, 1 female (*D. paranocturna*); 1.6 km NW of Glamis, 28 Aug 1992, D. G. Manley, 7 females; 1.6 km NW of Glamis, 28 Aug 1992, D. G. Manley, 2 females (*D. paranocturna*); 1.9 km W of Glamis, 24 Apr 1993, J. D. McCarty, 2 females; Glamis, 24 Jul 1995, D. G. Manley, 5 females and 22 males. RIVERSIDE Co.: Salton Sea, 22 Jul 1952, H. L. Mathis, 1 female (identified as *D. nocturna*, clearly *D. arenivaga*). SAN BERNARDINO Co.: 8 km NE of Yermo, 26 Jun 1939, W. M. Pearce, 1 female (identified as *D. paranocturna*, probably *D. arenivaga*); Kelso Dunes, 12.8 km SW of Kelso, 14–15 Jul 1974, J. Doyen, 2 females (identified as *D. nocturna*, clearly *D. arenivaga*). ARIZONA, YUMA Co.: Yuma, 6 May 1939, R. M. Bohart, 1 female (identified as *D. nocturna*, probably *D. arenivaga*). NEVADA, WHITE PINE Co.: Preston, Oct 1941, U. N. Lanham, 1 female. NO DATA. 1 male.

DISCUSSION

From the time of their original descriptions, it seemed likely that *D. nocturna* and *D. subhyalina* were female and male of the same species. However, Mickel (1928) did not want to make such a definitive statement solely on the basis of the fact that one female and two males were collected at the same time and location.

Females and males of many species of *Dasymutilla* are very similar in color and pattern. However, in many other species, male and female color patterns are very different from each other. This has made sex correlation of many *Dasymutilla* species quite difficult.

Nearly all species in the genus *Dasymutilla* are diurnal. The only five exceptions have already been mentioned. Of those, *D. nocturna*, some of the *D. paranocturna* specimens, and *D. subhyalina* all share the same colors, pattern, and geographic range. *Dasymutilla arenivaga*, some *D. paranocturna* specimens, and *D. megalophthalma* have different colors, pattern, and geographic range.

Two other specimens of *D. nocturna* were collected prior to the description of *D. paranocturna* (Hurd, 1951), both from Imperial Co., California. On the basis of the type specimens, and the slight variations between those examined by Mickel and those examined by Barr and Hurd, the latter saw fit to describe their specimens as a new species.

The holotype of *D. paranocturna* is undoubtedly a specimen of *D. nocturna*, with only slight variation in color of the pubescence and integument. Likewise, the paratype of *D. paranocturna* is undoubtedly a specimen of *D. arenivaga*, with only slight variation in color of the pubescence and integument. The specimens

identified as *D. paranocturna* that more closely resemble *D. nocturna* tend to be from the Algodones Sand Dunes or very nearby. The specimens identified as *D. paranocturna* that more closely resemble *D. arenivaga* are more widely distributed.

It is possible that all five of the "nocturnal" *Dasymutilla* represent a single species. However, numerous specimens of *D. arenivaga* and *D. megalophthalma* have been examined, including both holotypes. Although they are obviously closely related to *D. nocturna* and *D. subhyalina*, respectively, they appear to be distinct. These undoubtedly represent female and male, respectively, of the same species.

The specimen of *D. nocturna* that bears the collection locality of Preston, Nevada presents another problem. There is no question that the specimen is *D. nocturna*. However, no other specimen of this species has been found within 1100 km of Preston, Nevada. It seems much more likely that the specimen was collected in or near Imperial Co., California, and that it was mislabeled.

In July and August of 1974, 17 additional specimens of *D. subhyalina* were collected by the author from the Algodones sand dunes in Imperial County, California. No females were collected during that time. In May and June of 1975, the author collected 12 additional specimens of *D. nocturna* from the same location. However, no males were collected at that time. All specimens were collected at night. These specimens were subsequently compared to the respective holotypes and found to be identical. Although these additional specimens were all collected at night from the same location, no definitive statement could be made on conspecificity as specimens were not collected at the same time.

Additional specimens of *D. nocturna* were collected by the author in 1992, all from the same location. All were either crepuscular, matinal, or nocturnal in their habits. Eight specimens were collected on 12 May, and nine others on 13 May. Seven additional females were collected on 11 July. One of these specimens differed slightly with respect to color of pubescence and integument. It was subsequently compared to the holotype of *D. paranocturna* and found to be morphologically identical. On 28 August, an additional nine specimens were collected by the author from the same location. Seven had the pubescence and integumental coloration characteristic of *D. nocturna*; two had the slightly lighter-colored pubescence and reddish integument characteristic of *D. paranocturna*. Again, no males were taken during any of these collection dates. Diurnal collecting was done during all of the preceding collection dates. However, no mutillid specimens were ever taken except at dusk, during darkness, or right at dawn.

A female of *D. nocturna* was collected on 24 Jul 1995 on the Algodones sand dunes shortly after dark, and placed in a small, plastic cage from which the ends had been cut out and replaced with wire screen. A short time later, a male of *D. subhyalina* was attracted to the caged female, and attempted to mate with her through the wire screen. Later in the evening, another male was attracted to an uncaged female. Both were collected. In all, four females and 22 males were collected between 19:45 h (PDT) and 22:00 h (PDT).

Caged females have been used previously to attract males, both in cases where the male was already known and where the male was unknown. Males are not always attracted to the caged females. However, in all cases in which males have been attracted to the caged females, they have been subsequently shown to be

conspecific. And in cases where the males were previously known, they have always been of the same species as the caged female. Thus, the use of caged females is a reliable method for use in sex correlations among *Dasymutilla*.

CONCLUSIONS

Even before the addition of the present evidence, it seemed likely that *D. nocturna* and *D. subhyalina* represented female and male, respectively, of the same species. Furthermore, it seemed likely that *D. paranocturna* was also just a slight variant of the same species. The following facts lead me to believe that *D. nocturna*, many of the specimens of *D. paranocturna*, and *D. subhyalina* are members of a single species: 1) all are nocturnal, 2) all share the same geographic range, the Colorado Desert, 3) new evidence that numerous individuals have been found in the same place at the same time, 4) males have been observed attracted to and trying to mate with caged females. Because the name *D. nocturna* has precedence over the other two, that name shall stand. A synonymy for the species follows.

DASYMUTILLA NOCTURNA MICKEL

Dasymutilla nocturna Mickel, 1928: 279. Type locality: CALIFORNIA. *IMPERIAL Co.*: Colorado Sand Desert, near Andrade. Holotype deposited University of Minnesota. ♀

Dasymutilla subhyalina Mickel, 1928: 281. Type locality: CALIFORNIA. *IMPERIAL Co.*: Colorado Sand Desert, near Andrade. Holotype deposited University of Minnesota. NEW SYNONYM. ♂

Dasymutilla paranocturna Barr & Hurd, 1947: 88. Type locality: CALIFORNIA. *RIVERSIDE Co.*: Blythe. Holotype deposited California Academy of Sciences, Entomology (No. 5619). NEW SYNONYM. ♀

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